

REMARKS/ARGUMENTS

Claims 4, 7, 8 and 10-12 have been rewritten in independent form. It is respectfully submitted that rewriting claims in independent form does not represent changes made for patentability purposes.

Claims 5 and 7 have been amended to change their dependency from claim 2 to claim 4. Claim 16 has been amended to correct an obvious error in dependency. Claims 1-3 have been canceled.

Reconsideration of the application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1- 4, 8 and 13 stand rejected under 35 U.S.C. 102(e) as being anticipated by Chung(US2002/0044096A1). Claims 1-3 have been canceled. Applicants respectfully traverse the rejection as applied to claims 4, 8 and 13.

Claim 4 is directed to apparatus for identifying a plurality of items each of which has a radio frequency transponder, which apparatus comprises *inter alia*: a conveyor for conveying the items; a three dimensional radio frequency antenna for providing a three dimensional reading field in which all transponders in the reading field may be interrogated; a reader for sending interrogation signals to the transponders via the antenna and for reading identification information from the transponder; **means for interrogating the coils defining the reading field sequentially until all transponders are identified; and means for, after a transponder is identified, placing the transponder in a quiet mode to prevent that same transponder from responding to interrogation signals from the antenna.**

In contrast, Chung neither discloses nor suggests interrogating the coils sequentially until all transponders are identified or, after a transponder is identified, placing the transponder in a quiet mode to prevent that same transponder from responding to interrogation signals from the antenna.

The Examiner contends that paragraph[0038] of Chung discloses interrogating the coils sequentially until all transponders are identified. However, paragraph[0038] of Chung discloses that Chung includes “switches and control circuitry therefor for selectively connecting and disconnecting antennas 31-34 and 32-33 sequentially and/or alternately to the card reader/writer

of processor 50, thereby to **enable a single card reader/writer to be operated with a plurality of antennas.** “ (emphasis added) There is no mention nor suggestion that the sequential operation is for other than enabling a single reader/writer to be used with a plurality of antennas, let alone any disclosure or suggestion of interrogating the antenna coils sequentially until all transponders are identified.

The Examiner also contends that Chung teaches placing a transponder in a quiet state after it has been identified. However, the Examiner is not able to identify any part of Chung where this is disclosed. For the simple reason that there is no such disclosure. The Examiner states that a transponder is placed in the quiet mode by moving the transponder out of the range of the electromagnetic field . While it is true that a transponder cannot be read when it is out of the range of the electromagnetic field, this is not the same as placing a transponder in the quiet mode. As set forth in the specification(p.9, lines 20-29), the “quiet mode” is a mode in which after e of the transponders 82 in response to an interrogation signal has transmitted and has echoed back to the reader 62 bit by bit all of its message, that transponder 82 then ceases transmission (i.e., is placed in a quiet mode) and the remaining transponders 82 recommence operation until by repetition of the process all of the individual transponder messages have been transmitted and echoed back. Thus, a transponder is placed in the quiet mode while it is still within the electromagnetic field.

In view of the foregoing it is respectfully submitted that claim 4 is neither anticipated nor rendered obvious by Chung.

Claim 8 is directed to apparatus for identifying a plurality of items each of which has a radio frequency transponder, which apparatus comprises *inter alia*: a conveyor for conveying the items; a three dimensional radio frequency antenna for providing a three dimensional reading field in which all transponders in the reading field may be interrogated; a reader for sending interrogation signals to the transponders via the antenna and for reading identification information from the transponder; wherein the radio frequency transponder comprises:

- a housing;
- a substrate within the housing;
- a printed circuit board mounted on the substrate;

an integrated circuit mounted on the substrate;
a coil mounted on the substrate such as to be spaced therefrom; and
an encapsulant encapsulating the substrate, the printed circuit board, the integrated circuit chip and the coil, the spacing of the coil from the substrate enabling the encapsulate to completely surround the coil.

Claim 13 is directed to the same transponder as specified in claim 8.

The Examiner contends that Chung discloses a radio frequency transponder having a structure which is the same as set forth in claim 8. Applicants respectfully disagree. Among other deficiencies of Chung, there is no disclosure of an encapsulant encapsulating the substrate, the printed circuit board, the integrated circuit chip and the coil or of the coil being spaced from the substrate such as to enable the encapsulate to completely surround the coil.

The Examiner refers to paragraphs[0024]-[0025] and [0041]-[0042] as disclosing these feature. However, these portions merely disclose a "wireless article," such as an RFID tag which includes a loop antenna of one or more turns coupled to an electronic device, such as an integrated circuit. There is no disclosure of the transponder including a substrate, let alone the combination of a substrate, coil and integrated circuit. The disclosure in paragraph[0025] of a substrate refers to a substrate external to the transponder which may be used to attach the transponder to an object to be detected/identified - not to a substrate forming part of the transponder. Further, there is no disclosure of an encapsulant or of the coil being spaced from a substrate such as to enable the encapsulate to completely surround the coil.

In view of the foregoing it is respectfully submitted that claims 8 and 13 are neither anticipated nor rendered obvious by Chung.

Claim 15 stands rejected under 35 U.S.C. 102(b) as anticipated by Geiszler et al. (U.S. Patent No. 5,565,846). Applicants respectfully transverse this rejection.

Claim 15 is directed to a three dimensional radio frequency antenna which comprises inter alia a plurality of cylindrical antenna coils arranged within one another in a nested relationship, some of the coils being wound such that horizontal magnetic fields with phase shift at 180° and 90° may be generated and others of the coils being wound such that vertical magnetic fields with phase shifts of 180° may be developed.

Geiszler et al. does not disclose a plurality of cylindrical antenna coils arranged within one another. To the extent that the coils 34, 42 and 44 of Geiszler can be considered cylindrical coils, it is clear that they are not mounted in a nested relationship but are mounted in a spaced linear relationship. See for example Fig. 6B and 6C and Fig. 8. In view of the foregoing, it is respectfully submitted that claim 15 is clearly patentable over Geiszler et al.

Claims 5-7, 9, 10 and 18-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chung in view of Geiszler. Applicants respectfully traverse this rejection.

Claims 5 and 6 are each dependent from claim 4. The deficiencies of Chung with respect to claim 4 have been discussed above. None of these deficiencies are cured by Geiszler.

Accordingly, it is respectfully submitted that claims 5 and 6 are patentable for the same reasons as claim 4, as well as because of the combination of the features set forth in these claims with the features set forth in claim 4.

Claim 7 is directed to apparatus for identifying a plurality of items each of which has a radio frequency transponder, which apparatus comprises *inter alia*: a conveyor for conveying the items; a three dimensional radio frequency antenna for providing a three dimensional reading field in which all transponders in the reading field may be interrogated; a reader for sending interrogation signals to the transponders via the antenna and for reading identification information from the transponder; in which the antenna includes compensation coils with magnetic fields having a 180° phase shift positioned at the external limits of the reading area such that the magnetic fields outside of the reading area are insufficient to interrogate and read transponders outside the reading field.

Although Geiszler does disclose coils having 180° phase shift, there is no teaching of arranging the coils such that the magnetic fields outside of the reading area are insufficient to interrogate and read transponders outside the reading field. In fact Geiszler teaches just the opposite. In Geiszler the reading area is **external** to the coils.

Claim 9 is dependent from claim 8. The deficiencies of Chung with respect to claim 8 have been discussed above. None of these deficiencies are cured by Geiszler. Accordingly, it is respectfully submitted that claim 9 is patentable for the same reasons as claim 8, as well as

because of the combination of the features set forth in claim 9 with the features set forth in claim 8.

With respect to Claim 10, there is no teaching at all in Geiszler that a plurality of cylindrical antenna coils should be arranged within one another in a nested relationship with some of the coils being wound such that horizontal magnetic fields with phase shifts at 180° and 90° may be generated and with other of the coils being wound such that vertical magnetic fields with phase shifts of 180° and 90° may be developed and that the coils are arranged such that a three-dimensional reading area is developed and noise suppression are developed at opposite ends of the reading area.. Although Geiszler does disclose coils having 180° phase shift, there is no teaching of forming vertical and horizontal fields in such a manner nor in arranging the coils such that the reading area is developed internally of the coils and that the object to be interrogated is interrogated within that reading area. As should be apparent from Geiszler et al., not only is a three-dimensional reading area not developed but the reading area is external to the coils.

In view of the foregoing it is respectfully that claim 10 is clearly patentable over the combination of Chang in view of Geiszler et al.

Claim 18 is dependent from claim 15. The differences between claim 15 and Geiszler have been fully discussed above. Thus, Geiszler et al. does not disclose a plurality of cylindrical antenna coils arranged within one another. To the extent that the coils 34, 42 and 44 of Geiszler can be considered cylindrical coils, it is clear that they are not mounted in a nested relationship but are mounted in a spaced linear relationship. See for example Fig. 6B and 6C and Fig. 8.

Further, the reading area of Chang is within the antennas.. It is not seen, therefore, why one skilled in the art would be led to replace the antennas of Chang which have an internal reading field with an arrangement with an external reading field, such as Geiszler. In view of the foregoing, it is respectfully submitted that claim 15 is clearly patentable over the combination of Chang and Geiszler.

Claims 19 - 22 are dependent from claim 18 and are therefore patentable over Chang and Geiszler for the same reasons, as well as because of the combination of the features set forth in these claims with the features set forth in claim 18.

Applicants gratefully acknowledge the allowability of claims 11,12 , 16 and 17.

In view of the foregoing, this application is now believed to be in condition for allowance, which action is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on October 18, 2005:

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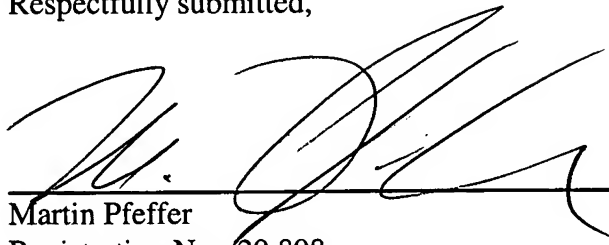


Signature

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Date of Signature

Respectfully submitted,



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